Ham-Space Digest   Tue, 28 Jun 94   Volume 94 : Issue 170

Today's Topics:
                    * SpaceNews 27-Jun-94 *
            decoding telemetry by telephone modem ?
                 GPS group purchase shutdown
                Newbie Experience with DOVE Satellite

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Mon, 27 Jun 1994 12:05:57 MDT
From: ihnp4.ucsd.edu!usc!howland.reston.ans.net!europa.eng.gtefsd.com!
newsxfer.itd.umich.edu!nntp.cs.ubc.ca!alberta!ve6mgs!usenet@network.ucsd.edu
Subject: * SpaceNews 27-Jun-94 *
To: ham-space@ucsd.edu

SB NEWS @ AMSAT $SPC0627
* SpaceNews 27-Jun-94 *

BID: $SPC0627

                        =========
                        SpaceNews
                        =========

                   MONDAY JUNE 27, 1994

SpaceNews originates at KD2BD in Wall Township, New Jersey, USA. It is
published every week and is made available for unlimited distribution.

* DOVE TESTING CONTINUES *
===========================
At about 6/11/94 05:30 UTC controllers completed a reload of the DOVE
software and activated another voice test. The pronunciation of the word
'Hi' is a bit different and the overall amplitude of the voice is higher.

Controllers expect to continue the hardware testing process after a period
of software development on the ground that will probably last several days
to a few weeks.

The following packet frames were received from DOVE by KD2BD late last week:

DOVE-1>TIME-1 <UI>:
PHT: uptime is 014/02:11:51. Time is Fri Jun 24 16:11:31 1994

DOVE-1>BRAMST <UI>:
0500 utc 14 June 1994

Voice Module now active
Software testing continues
S-Band transmitter is off

73 DOVE Command Team (WJ9F)

Reception reports of how well the voice is heard with simple receiving
equipment (like an HT and rubber duck) would be appreciated. Please send
reports via the Internet to WJ9F, PY2BJO, WD0E, VK7ZBX, or N5AHD @amsat.org.
Telemetry is not needed at this time.

[Info via Jim White, WD0E, of the DOVE command team]

* STS-65 SAREX INFORMATION *
===========================
Shuttle mission STS-65 using orbiter "Columbia" is scheduled for launch
on 08-Jul-94 at 17:06 UTC for a 14-day microgravity scientific mission.
A SAREX package in configuration 'C' will be carried on Columbia on this
mission. Crew members Donald A. Thomas, Mission Specialist, KC5FVF, and
Robert D. Cabana, (callsign?) are among the licensed astronauts flying on
mission STS-65.

The primary payload for STS-65 is the International Microgravity Laboratory

(IML-02), that includes a complement of international experiments with its main focus on materials and life sciences research in microgravity. The payload crew members will perform the experiments in a "gravity gradient" stabilized attitude (shuttle tail pointed toward Earth) to maintain the best possible laboratory conditions with the least gravitational disturbances in the Spacelab.

One of the secondary payloads will be the Shuttle Amateur Radio Experiment. SAREX configuration C consists of a 2-meter handheld transceiver, I/F module, PGSC, spare battery set, window antenna, packet module, SAREX headset assembly, personal recorder, and required cable assemblies. The packet module contains a power supply and packet TNC. The power supply provides power for the TNC and the handheld transceiver. The TNC interconnects with a radio transceiver so that data to and from the computer is transmitted to and received from other amateur radio stations. Configuration C is capable of operating in either the voice or data mode in communications with amateur stations within LOS of the Orbiter. This configuration can be operated in the attended mode for voice communication and either the attended or automatic mode for data communications.   The payload control weight for SAREX configuration C is 45 lb (20.41 kg).

SAREX sponsors include the American Radio Relay League (ARRL), The Radio Amateur Satellite Corporation (AMSAT), and The National Aeronautics and Space Administration (NASA). SAREX is supported by the Federal Communications Commission (FCC).

The crew will use separate receive and transmit frequencies. PLEASE DO NOT transmit on the Shuttle's downlink frequency. The SAREX frequencies for mission STS-65 are as follows:

Voice Downlink: (Worldwide) 145.55 MHz [Receive Only]
Voice Uplink: 144.91, 144.93, 144.95, 144.97, 144.99 MHz
Voice Uplink: (Europe only) 144.70, 144.75, 144.80 MHz
Packet Downlink: 145.55 MHz
Packet Uplink: 144.49 MHz

KC5FVF is the callsign that will be used for making voice contacts. W5RRR-1 will be used for packet radio connections.

QSLs and reception (SWL) reports should be sent to the ARRL EAD, STS-65 QSL, 225 Main Street, Newington, CT 06111, USA. Include the following information in your QSL or report: STS-65, date, time in UTC, frequency and mode (FM voice or packet). In addition, a large, business sized SASE must be included if you wish to receive a card in return. The Lake County Amateur Radio Club in Munster, Indiana, has generously volunteered to manage the cards for this mission.

The following is STS-65 Keplerian element set JSC-003:

```
STS-65
1 00065U          94189.76284929  .00052344  00000-0  15762-3 0    37
2 00065  28.4664  13.0731 0003571 330.7493  29.2906 15.90324781    23


Satellite: STS-65
Catalog number: 00065
Epoch time:       94189.76284929   =    (08 JUL 94   18:18:30.18 UTC)
Element set:      003
Inclination: 28.4664 deg
RA of node:        13.0731 deg          Space Shuttle Flight STS-65
Eccentricity: .0003571              Prelaunch Element set JSC-003
Arg of perigee:   330.7493 deg        Launch:  08 JUL 94  17:06 UTC
Mean anomaly:      29.2906 deg
Mean motion:   15.90324781 rev/day        Gil Carman, WA5NOM
Decay rate:      5.2344e-04 rev/day^2    NASA Johnson Space Center
Epoch rev:                2
Checksum: 289
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[Info via The American Radio Relay League]

* InfoEspace *
==============
As of 20-Jun-94, VE2TRV, has started translating SpaceNews into French for
the francophone VE2-population. Mike has noted a lot of recent interest in
astronomy and space-related subjects, and believes the French language
version of SpaceNews will become very popular. Mike has been translating
some articles from SpaceNews for the Laval Laurentian ARC newsletter, and
reports the 360 members really appreciate it.

My thanks to VE2TRV for the time and effort of performing the language
translation!

* RS-14 / RS-10 OBSERVATION *
============================
During a recent pass of RS-10 over the central United States, OSCAR-21's
(RS-14) CW beacon (145.822 MHz) was observed through RS-10's ROBOT on
29.403 MHz at 21:36 UTC on 24-Jun-94.

Orbital analysis showed RS-10 over southern Oklahoma and heading south,
while RS-14/AO-21 was over the east coast of Mexico and heading north when
the beacon was heard.

Although RS-10's ROBOT input passband (centered on 145.820 MHz) is several
kilohertz wide, RS-14's telemetry was heard for only a short period of
time because of the high relative motion between the two spacecraft. The

Doppler shift this motion produced was well in excess of the ROBOT input
passband. The beacon received from RS-14 by RS-10 drifted quicky through
the ROBOT passband as the two satellites passed one another over the south
central United States.

* THANKS! *
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Thanks to all those who sent messages of appreciation to SpaceNews,
especially:

                 N1MDZ   VE2TRV   G3RHP   F5OYH

* FEEDBACK/INPUT WELCOMED *
===========================
Mail to SpaceNews should be directed to the editor (John, KD2BD) via any
of the following paths:

FAX   : 1-908-747-7107
PACKET   : KD2BD @ N2KZH.NJ.USA.NA
INTERNET : kd2bd@amsat.org -or- magliaco@pilot.njin.net

MAIL   : John A. Magliacane, KD2BD
           Department of Engineering and Technology
           Advanced Technology Center
           Brookdale Community College
           Lincroft, New Jersey 07738
           U.S.A.

      <<=- SpaceNews: The first amateur newsletter read in space! -=>>

/EX

--
John A. Magliacane, KD2BD   * /\/\ * Voice   : 1-908-224-2948
Advanced Technology Center |/\/\/\| Packet : KD2BD @ N2KZH.NJ.USA.NA
Brookdale Community College |\/\/\/| Internet: magliaco@pilot.njin.net
Lincroft, NJ 07738   * \/\/ * Morse   : -.- -.. ..--- -... -..

Date: 27 Jun 1994 13:51:31 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!xlink.net!fauern!uni-
regensburg.de!pcphy2.physik.uni-regensburg.de!juergen.putzger@network.ucsd.edu
Subject: decoding telemetry by telephone modem ?
To: ham-space@ucsd.edu

Hi,

I would like to decode the telemetry of DOVE-OSCAR17. Is it possible to do
this with an ordinary telephone modem (Hayes compatible, max. 2400 Baud) ?
The transmission rate is 1200 Baud AFSK (like packet radio). A circuit will
be needed to simulate the telephone line, i suppose a DC-source in
series with a transformer would do the job. Has anyone tried this with
success?

Juergen Putzger (juergen.putzger@physik.uni-regensburg.de)

Date: 27 Jun 1994 17:26:53 GMT
From: src.dec.com!crl.dec.com!nntpd.lkg.dec.com!nntpd2.cxo.dec.com!
specxn.enet.dec.com!bonomo@decwrl.dec.com
Subject: GPS group purchase shutdown
To: ham-space@ucsd.edu

Greetings, all.

As I have not achieved critical mass in the number of orders for the
Motorola GPS engines, I am shutting down the group purchase.

I am on vacation for the next two weeks. If, upon returning, there has
not been enough orders received to reach the magic 100 mark, I will be
returning the checks to those who have sent them to me, and
discontinuing any efforts in this area. As of now, I have orders for
about 35 units. For those of you interested, that's about $13,000
sitting on my desk.

Thanks for your time, efforts and wonderful interest in this matter.

Regards,

Tom Bonomo

Date: Mon, 27 Jun 1994 15:44:29 GMT
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!natinst.com!radian!
philr@network.ucsd.edu
Subject: Newbie Experience with DOVE Satellite
To: ham-space@ucsd.edu

Newbie Experience with DOVE Satellite

I finally decided to see if I could "catch" my first
satellite last week. Since DOVE is supposed to be so
easy to hear, I decided that it would be my target.
Everything you've heard about it is TRUE. I fired up
a tracking program, determined when the next pass would
be, and then turned on my ICOM handi-talkie. Right on
schedule, there it was saying, "HI, THIS IS DOVE IN SPACE."
Would could be easier? I thought I'd share my experience
with the net just in case there are any others out there
who have been wanting to try and hear a satellite first
hand, but haven't ever gotten around to it.

There are plenty of other sources that describe the
satellite itself in detail. Let me just say here that
the frequency you are interested in is 145.825 MHz.
The channel alternates between standard packet and
digitized voice. The packet sessions are transmit-only
(you cannot connect to the satellite) and last for 3
minutes and 10 seconds. I have included what I received
during one of the transmissions at the end of this
message so you can see what it looks like (anyone know
how to decode the telemetry information?). After 3 minutes
and 10 seconds of packet traffic, the digitized voice
switches on. The voice is male and sounds pretty artificial.
It says, "Hi, this is DOVE in space." It repeats this phrase
9 times, for a total of 66 seconds. It then switches back to
packet and starts all over again. (I understand that this
sequence is highly subject to change, but this is how it has
been working for the past several days.)

The signal is quite strong. In fact, on close passes, I was
able to copy the signal clearly using nothing more than a
Bearcat 200XLT scanner with the stock rubber duck antenna.
Using a discone antenna *inside* my attic, my ICOM 02AT was
able to receive the satellite at less than 5 deg elevation
and it broke the squelch at 25 deg elevation. On passes above
about 40 deg elevation, it broke the squelch on a Bearcat
200XLT with a duck. I found that leaving the squelch open
(off) resulted in much more copy time. (Just turn down the
volume a little so the static doesn't drive you nuts!)

There isn't much Doppler shift to worry about. In fact, you
could just set your radio to 145.825 and not worry about it.
But, if you want to squeeze every last little peep out of a
pass, I found that starting the radio on 145.830, then switching
to 145.825 after about one-third of the pass, then switching to
145.820 for the last third of the pass, extended the copy time
a little.

I found that generally speaking, you can copy three passes
in a block. Usually the first pass is pretty low on the horizon,
the second pass is a pretty good one (close to overhead), and
then the third one is a pretty low pass again. I was listening
to passes around noon local time as the satellite was traveling
from north to south. The first pass was to the east, then
overhead, and then to the west. The passes are about 90 minutes
apart and an overhead pass lasts about 15 minutes.

All you need to copy the packet transmissions is a standard VHF
TNC. Just remember that you do not connect to the satellite, so
you need to make sure that you have your software set to monitor
all packets the TNC receives. For those of you who don't have
a amateur radio license (why not?!) and don't know what packet
radio sounds like, scan between 145.010 and 145.100 MHz. That
bleeeeep sound is what you are listening for from the satellite.

Get a copy of any of the satellite tracking programs and a copy
of the latest elements. I used the 2-line NASA format elements
that TS Kelso posts to rec.radio.amateur.misc (thanks, Dr. Kelso!).
The satellite you are interested in is identified as DO-17.
Determine the time of the next pass with an elevation of around
40 deg or more (for your first try), and turn on your radio.
Alternatively, if you don't have access to a tracking program,
you can just set your radio to 145.825 MHz with the squelch on,
and wait for a pass. That's all there is to it!

Phil, KA5PVH
philr@radian.com

XOXOXOX BEGIN DOVE PACKET SESSION XOXOXOX

17-Jun-94 13:04:02 SWITCH*>SWITCH <DM>
17-Jun-94 13:04:53 SWITCH*>SWITCH <DM>
17-Jun-94 13:05:30 DOVE-1*>BCRXMT <UI>:
vmax=769249 battop=766771 temp=-118087
17-Jun-94 13:05:30 DOVE-1*>LSTAT <UI>:
I P:0x1553 o:0 l:6734 f:6947, d:0 st:0
17-Jun-94 13:05:30 SWITCH*>SWITCH <DM>
17-Jun-94 13:05:53 DOVE-1*>TIME-1 <UI>:
PHT: uptime is 007/04:05:20. Time is Fri Jun 17 18:05:00 1994

17-Jun-94 13:05:53 SWITCH*>SWITCH <DM>
17-Jun-94 13:05:57 DOVE-1*>TLM <UI>:
00:57 01:58 02:86 03:34 04:59 05:58 06:6C 07:56 08:70 09:72 0A:A2
0B:F5 0C:E8 0D:DA 0E:50 0F:25 10:E4 11:AC 12:00 13:D6 14:98 15:B1

```
16:6C 17:65 18:66 19:5F 1A:66 1B:00 1C:70 1D:68 1E:CA 1F:66 20:D6
17-Jun-94  13:05:58  DOVE-1*>TLM <UI>:
21:D3 22:84 23:18 24:16 25:26 26:1E 27:02 28:02 29:1A 2A:06 2B:58
2C:00 2D:64 2E:54 2F:A9 30:D6 31:AA 32:00 33:00 34:B0 35:A4 36:A8
37:AA 38:83
17-Jun-94  13:05:59  DOVE-1*>LSTAT <UI>:
I P:0x1553 o:0 l:6734 f:6947, d:0 st:0
17-Jun-94  13:05:59  SWITCH*>SWITCH <DM>
17-Jun-94  13:06:23  DOVE-1*>TIME-1 <UI>:
PHT: uptime is 007/04:05:50.  Time is Fri Jun 17 18:05:30 1994

17-Jun-94  13:06:23  SWITCH*>SWITCH <DM>
17-Jun-94  13:06:27  DOVE-1*>TLM <UI>:
00:59 01:59 02:86 03:34 04:58 05:5A 06:70 07:56 08:6D 09:71 0A:A2
0B:F4 0C:E8 0D:DB 0E:38 0F:25 10:E4 11:AC 12:00 13:D9 14:98 15:B0
16:6C 17:63 18:65 19:64 1A:63 1B:01 1C:6C 1D:6C 1E:D0 1F:67 20:D6
17-Jun-94  13:06:28  DOVE-1*>TLM <UI>:
21:D3 22:84 23:1B 24:17 25:29 26:45 27:06 28:01 29:1D 2A:02 2B:50
2C:01 2D:7C 2E:5D 2F:AA 30:DA 31:A9 32:00 33:01 34:B1 35:A4 36:A9
37:A6 38:82
17-Jun-94  13:06:28  DOVE-1*>STATUS <UI>:
 80 00 00 91 01 18 EE 02 00 90 00 01 0D 0F 3C 05 0F 00 00 00 00
17-Jun-94  13:06:29  DOVE-1*>BRAMST <UI>:
0500 utc 14 June 1994

Voice Module now active
Software testing continues
S-Band transmitter is off

73 DOVE Command Team (WJ9F)
17-Jun-94  13:06:30  DOVE-1*>BCRXMT <UI>:
vmax=769249 battop=766771 temp=-118087
17-Jun-94  13:06:30  DOVE-1*>LSTAT <UI>:
I P:0x1553 o:0 l:6734 f:6947, d:0 st:0
17-Jun-94  13:06:30  SWITCH*>SWITCH <DM>
17-Jun-94  13:06:53  DOVE-1*>TIME-1 <UI>:
PHT: uptime is 007/04:06:20.  Time is Fri Jun 17 18:06:00 1994

17-Jun-94  13:06:53  SWITCH*>SWITCH <DM>
17-Jun-94  13:06:58  DOVE-1*>TLM <UI>:
21:D4 22:84 23:1E 24:17 25:26 26:64 27:09 28:01 29:1E 2A:02 2B:44
2C:00 2D:86 2E:64 2F:AA 30:DA 31:A9 32:01 33:01 34:AF 35:A4 36:A8
37:AA 38:83
17-Jun-94  13:06:58  SWITCH*>SWITCH <DM>

XOXOXOX  END DOVE PACKET SESSION  XOXOXOX

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End of Ham-Space Digest V94 #170
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